DOCUMENT RESUME

ED 099 191 95 SE 017 053

AUTHOR	Tanner, R. Thomas
TITLE	Environmental Studies in Nine Courses at Crescent Valley High. Project Reports, Volume 6, The Rachel Carson Project.
INSTITUTION	Corvallis School District 509J, Oreg.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Office of Environmental Education.
BUREAU NO	BR-1-0839
PUB DATE	Sep 72
GRANT	OEG-0-71-4623
NOTE	75p.; Related documents are SE 017 047-054
EDRS PRICE	MF-$0.75 HC-$4.20 PLUS POSTAGE
DESCRIPTORS	Conservation Education; Curriculum Guides; Ecology; *Environmental Education; *Instructional Materials; *Interdisciplinary Approach; Learning Activities; Natural Resources; *Program Content; *Secondary Education; Teaching Guides; Units of Study (Subject Fields)
IDENTIFIERS	*Rachel Carson Project

ABSTRACT

This document is the sixth of seven accompanying volumes included in the Rachel Carson Project. The project attempts to introduce environmental education lessons and units into existing courses of study within a high school curriculum rather than to implement environmental education through the introduction of new courses. This volume includes examples of the units and activities developed and implemented in the following high school courses: psychology; typing; architecture; modern foreign languages including French, Spanish, and German; algebra; world studies; and home economics. The framework of each course is described, student goals are stated, the organization of the environmental unit is presented, and examples of student work are included. Suggested projects, materials needed, and suggested methodologies are among the contents of each course report. (MLB)

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ENVIRONMENTAL STUDIES IN NINE COURSES AT CRESCENT VALLEY HIGH

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Project Reports, Volume VI
The Rachel Carson Project
USOE Project No. 1-0839
Grant No. OEG-0-71-4623

R. Thomas Tanner, Director

September, 1972

The research reported herein was performed pursuant to a grant with the U.S. Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

This volume is one of seven which constitute appendices to the "Operating Manual for Rachel Carson High," final report to the U.S. Office of Education, U.S.O.E. grant number OEG-0-71-4623. That report describes the Rachel Carson Project, which was supported by a grant from the Office of Environmental Education of the U.S.O.E. The Project was an attempt to pervade the existing curriculum of a high school with environmental education, with participation by faculty members representing many (ideally all) disciplines.

The project was based upon the philosophy that a positive environmental ethic should pervade our culture subtly but powerfully, just as - some people would say - materialism or pragmatism now do. Perhaps the best way to encourage the new ethic through formal education is to pervade the culture of the school, subtly but powerfully, rather than to establish a single new course such as "Man and Environment" or "The Environmental Ethic." (Note that the American public school does not offer courses in "Materialism" or "Pragmatism" - enculturation to these values, if indeed it occurs, is via more subtle means.)

This philosophy at work was exemplified by the present writer in an article extitled "A Day At Rachel Carson High," which appeared in the Phi Delta Kappan in March, 1970 (vol. 52, no. 7, pp. 399-401). The article follows a boy through one day at the fictitious Carson High. On this day: his chemistry class is dealing with the chemistry of the internal combustion engine and its emissions as they interact with biota; his English class is discussing the novel The Roots of Heaven, about one man's war against ivory hunters; his physical education class is examining various outdoor recreational activities and the degree to which they do or do not interfere with the activities of others; his American problems class is reviewing old American values such as freedom and equality before the law, and discussing the kind of physical environment in which they can best be popularly achieved.

On this particular day, classes are shortened so that teachers may have one of their regular planning meetings, the object of which is to facilitate the planning of their courses around such themes as:

Tomorrow's Technology and Today's License. (Rapaciousness toward natural resources is frequently excused with the rationale that tomorrow's as-yet-undeveloped technology can restore or offer satisfactory substitutes for those resources. This is a dangerous and irresponsible fallacy.)

Man in Nature, Man over Nature. (The belief that we can conquer nature has traditionally pervaded our culture - another dangerous fallacy.)*

*The reader may wish to refer to other themes and concepts underlying the project. Various of these have been elucidated by the present writer in articles in: The Science Teacher (April 1969, pp. 32-34; April 1972, pp. 12-14); Phi Delta Kappan (March 1970, pp. 353-356); Environmental Education (Summer 1971, pp. 34-37); AIBS Education Division News (August 1972). See also Hawkins, Mary E. (editor), Vital Views of the Environment, National Science Teachers Association, 1971, for an excellent selection of important concepts explained in brief articles by highly qualified authors. We have found this volume useful.

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At the fictional Carson High, more or less standard course titles are retained, but each course includes lessons or units reflecting themes such as those above. During the 1971-72 school year, we attempted to implement this model at the new Crescent Valley High School in Corvallis, although some of our work was also done in Corvallis High School, for reasons discussed in the body of our final report.

Participation was sufficiently wide and diverse as to include classes in typing, modern foreign languages, home economics, industrial arts, drivers' training, English, the natural and social sciences, and mathematics, as well as so-called extra-curricular activities. As noted earlier, this volume is one of seven, largely teacher-written, which describe the lessons and units developed during our brief experiment in curriculum innovation.

We hope that the Rachel Carson idea and at least some of these materials will be found worthy of emulation elsewhere.

We wish to thank all of those who participated in the project, and we especially wish to thank Dr. Clarence D. Kron, now Chairman of the Department of Education at the new University of Texas of the Permian Basin in Odessa. As Superintendent of Corvallis Schools, he offered the unfailing support which made the project possible. We are confident that vision and dedication will continue to characterize his performance at his new position, as was true here. We wish to thank also our new Superintendent, Dr. Thomas D. Wogaman, for continuing to provide an atmosphere congenial to our work during its final stages.

The titles of the report and the seven accompanying volumes are as follows:

Main Report: OPERATING MANUAL FOR RACHEL CARSON HIGH

Accompanying Volumes:

I. MAN AND NATURE - A LITERATURE COURSE
II. THE AMERICAN AND HIS ENVIRONMENT - A SOCIAL SCIENCES COURSE
III. ENVIRONMENTAL STUDIES IN THE PHYSICAL SCIENCES
IV. ENVIRONMENTAL STUDIES IN SEVERAL SCIENCE COURSES
V. CASE STUDIES OF CONSERVATION "BATTLES"
VI. ENVIRONMENTAL STUDIES IN NINE COURSES AT CRESCENT VALLEY HIGH
VII. ENVIRONMENTAL STUDIES: FIVE MISCELLANEOUS REPORTS

R. Thomas Tanner, Director, The Rachel Carson Project

Cispus Environmental Learning Center
Randle, Washington 98377
September 23, 1972

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LIFE GIVES ME BACK THE SAME

by

Gertrude Branthover

Editor's Note: Miss Branthover was hired as a counselor and psychology teacher at Crescent Valley High because of her excellent record in this dual role; her reputation for empathy and understanding of young people - tempered by firmness as appropriate - had also led to her previous position at the innovative new John Adams High in inner Portland. We believe that these qualities are reflected in the unit which she and her students so graciously developed as part of our project.

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LIFE GIVES ME BACK THE SAME
(Positive Approach to Ecology)

By

Gertrude Branthover

And

Members of the Psychology
Class

CHEERFUL CHERUB SAYS:

TO GIVE MY VERY BEST TO LIFE
SHOULD BE MY GREATEST AIM...
IT HELPS ME TOO, FOR WHEN I DO
LIFE GIVES ME BACK THE SAME[1]

INTRODUCTION

A practical education into the field of ecology is the development of more love for ourself, mankind, nature and our universe. As we become more aware of the beauty in people and nature, often we show greater concern for each other and our surroundings. This leads to a willingness to care for and develop this beauty.

To have the opportunity to develop awareness and show greater appreciation for each other, we need to share meaningful experiences together. Leadership must be provided to open our eyes to the beauty around us as Rachel Carson did for her young nephew and shared this with us in her book, THE SENSE OF WONDER. Leadership must also be provided in teaching students to share ideas through discussions with each other.

Added to this is the need for each of us to be aware of what has to be done to preserve the ecological balance between man and nature, and a desire to become involved in getting this done.

---

[1] Wyeth, Rebecca, CHEERFUL CHERUB, Covici, Friede, New York, 1932. Each unit is introduced by a Cheerful Cherub verse for it has such a common sense approach to our studies and yet adds humor to its meaning.

Cheerful Cherub says it well, "Life gives us back the same."

Psychology has an important role in the field of ecology by:

1. Assisting students to become more aware of the beauty in them and around them.
2. Teaching us to enjoy this beauty so that it becomes more meaningful to us.
3. Developing a sense of responsibility in caring for and preserving this beauty for generations to come.

Student Leslie Easton writes....

Walking in the forest, rain falling....sometimes catching on the leaves. It would be nice if people could catch onto leaves more often. It seems that many times we push the leaves aside, pass them by. I would like to see a world (and be a part of one) where people opened their arms, not only to leaves, but to other people too.

There is such an endless supply of joy among nature and man. By taking advantage of their joys one can gain a special strength not possible any other way. Strength to face time of distress with hope...strength to reach out your arms to someone who is not able to reach out toward you. Life is a creative force, one that is continually moving. I do not think that it was by chance that we, along with other animals and trees (plus leaves), were brought here. Rather I believe that life is a gift and all potential is here to take advantage of its movement and live in harmony.

.....

I SHALL PASS THIS WAY BUT ONCE
THEREFORE ANY GOOD THAT I CAN DO
OR ANY KINDNESS THAT I CAN SHOW
LET ME DO IT NOW
FOR I SHALL NOT PASS THIS WAY AGAIN.

.....

PLAN OF ACTION

The development of this unit will be extended over a three-year period of time. Material that proves of value will be used again; other material may be revised or discarded. Each class will add a wider perspective to the unit so that within the three-year period of time, students and teacher will have developed a student-directed unit of ecology.

Framework within the plan

A democratic process is used in the psychology class. Hence a structure is established, tasks presented and freedom of movement within the structure is given in development of ideas and completion of tasks.

By setting goals and establishing guidelines, each knows what is expected of him, his responsibility for himself and the class and a sense of direction established so there is freedom to move toward goals.

STUDENT GOALS

1. To assist in the development of this unit as an individual and a member of the group on sponsoring activities.
2. To train myself in greater awareness of the beauty surrounding me.
3. To develop greater appreciation for the beauty in people and nature.
4. To learn the close inter-dependence of man and nature in the matter of survival.
5. To use my creativity in broadening horizons through activities that are stimulating to others in understanding the role of ecology in society.
6. To give support to action that improves the beauty and usefulness of our environment.
7. To assist others in developing a keener awareness of beauty so that they, too, want to take an active part in keeping America beautiful and useful for generations to come.

GUIDELINES

Three basic guidelines in psychology class are thoughtfulness, positive action and enjoying differences with others.

The area of action in this study is confined to the home, school, community and surrounding area.

The direction is as follows:

1. To develop an awareness and appreciation of the things we have going for us in life and the universe.
2. To accept responsibility for the improvement and preservation in all areas of study.
3. To develop creativity in ideas and action which enables others to become more aware of the beauty surrounding us.
4. To value the positive and beautiful in things we have and actions we do, so that we contribute our share to the universe.

ORGANIZATION

Large Group (First Session)

The basic material is presented to the class, and students are made aware of structure, guidelines, expectations and their responsibility.

Task

To develop an increasing awareness of beauty in people, life and the universe through group and individual projects.

Small Group (First session)

Toss ideas into the "think tank" and come up with a list of individual and group projects to present back to the class for discussion and selection of group projects as well as a chance for greater individual involvement in projects.

Large Group (Second session)

Small groups present ideas and the class selects major projects as well as making the class aware of the many kinds of things they can do as individuals.

Small Group (Second session)

Class divided into small groups by projects and they are to come up with detailed plans for their project from start to completion to present back to the class. At this time committees may be set up for specific tasks.

Large Group (Third session)

Small groups present detailed plans and enlist support from class members.

From this point--time is set aside for individual projects, small group planning and reports are given from time to time as to where we are and what we are planning and the help we need from class members. Also an evaluation of plans as they are being developed by the group.

The class works in committees or members work alone, depending upon the task they have to do. They may shift roles and move from one project to the other. There is a great deal of freedom here in the development and carrying out of project commitments.

AWARENESS

This is the teacher's contribution to the class as an individual project. Two sources have been of great value; namely, Rachel Carson's SENSE OF WONDER[2], which is really a study in awareness as one aspect of the book; and Chuck Holst, a member of the class, who presented to the English class one of his creations, using the technique of projection slides.

Getting people to really see with their eyes more than they presently do, to hear and appreciate sounds that continually surround them, is a specific objective here.

---

[2] Carson, Rachel, SENSE OF WONDER, Harper and Row, 1965

For instance, have you ever been aware of bullfrogs communicating with each other? Above the water is only a small portion of their head which seems to be mostly two large eyes looking at you. Once you hear the sound that emerges, you forget all about the eyes. If someone didn't tell you a frog was communicating with another frog who is in the vicinity, one would wonder where the horribly loud sound came from, surely not from such a small creature as a bullfrog. These frogs are very appropriately named from their sounds in communication. They are very curious and eager to share what they learn with other frogs in the area. In all their seriousness they express comedy in action for these frogs must feel terribly important sharing information about disturbing elements around their pond.

When we see, hear, smell, touch and taste with appreciation, our feelings become more intense, or perhaps when our feelings become involved, we add meaning to many experiences that may have just existed previously.

To do: (class)

1. Describe the sounds you hear on a clear summer evening while camping, sailing, sitting around a campfire, sleeping out, etc.
2. Write down what you saw coming to school this morning. Then concentrate on your awareness from home to school each morning and at the end of the week re-write the assignment, putting in descriptive words that help others to see what you did and feel as you felt.

At this point, a set of projection slides featuring beautiful and natural places was shown, with "narration" consisting of a number of poems from various sources. The theme of the slide presentation was The Art of Awareness, taken from a poem of the same name by Wilfred Peterson.[3]

To do: (small group)

Following the presentation, discuss in your small group how each of you might become more aware. Then share some of your ideas with the large group.

Next I presented a poem entitled How Do I Love You, accompanied by the background music of "Lora's Theme," from Dr. Zhivago.

To do: Small group

Discuss the responsibility each of you has for making friends, and find out things people want you to do so they can feel more at ease with you.

---

[3] Peterson, Wilfred, THE ART OF LIVING, Simon and Shuster, 1961

How do we show people we care about them? Do we want to love people? What points can you give to others who find it hard to care about all kinds of people?

Give the results of your discussions to the large group so that we may enlarge our concepts in letting people know they count with us.

PROCESS

The following demonstrates how organization is carried through process to the end projects.

Class (First session)

As a general rule this isn't the most pleasant session for a teacher, especially when students know they will be left on their own to come up with ideas in developing the unit.

The teacher presented the task, giving the structure within which the task is to be carried out. (Refer to task, guidelines and goals under "Organization".)

It would have been easier to present a list of possible assignments and let people choose from the list, the teacher supplying materials, etc. However, students were left with the general instructions of coming up with ideas that could be pursued by the class or individuals. Immediately a division of the house occurred, since some wanted to get moving, the few who thought they might be bored because they already knew so much about ecology. The assignment required thinking, even creativeness, and at such times a few students get frustrated and often angry with the teacher, but the teacher knows they always come through with some good ideas that can be developed.

Small Group (First session)

The small group was to come up with individual and class projects. All they needed was a very general idea and it would be developed after the class decided which ideas they wished to pursue.

The small groups struggled with the task, at first some expressing negative feelings as to why they didn't want to pursue the task.

Joe Blickenstaff expresses it this way.....

I have been helping plan the Ecology Day. It seemed we didn't really do very much for a while and then something happened. We were all just sitting around and doing nothing, after we had first written down all of our ideas that were worth something. I was getting frustrated for a while because everybody was just arguing and nothing was really getting done. I was frustrated because I felt that I knew what should be done but nobody was listening. The day we were writing down all of our ideas from the group, everybody was arguing about them that were there but not doing what we were supposed to be doing which was listening

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and listing our ideas. I felt we wasted a lot of time doing this, before really getting busy.

.....

In the process, people need to get feelings aired and then they are ready to really concentrate on the task.

After feelings are aired, the group realizes that the task is still there and they begin to look at the possibilities the task holds for each of them. The small group usually comes through since they want to be involved in what goes on within the class as we clue others in to some of our thinking.

Class (Second session--two class periods)

Small groups each select their representative to present their feedback. This person is in charge of the class during this time. The small groups returned the following general ideas for class participation:

1. Discussing attitudes
2. Planning field trips
3. Working on litter problem
4. Planning an Ecology day for the school
5. Encouraging bike riding to school as means of transportation.

Individual or small group projects suggested were:

1. Getting speakers
2. Getting films
3. Reading
4. Compiling a Bibliography
5. Participation in road-side clean-up
6. Encouraging re-cycling
7. Planting flowers and cucumbers to beautify school area
8. Relating man to nature
9. Studying effects of over-population and excess noise
10. Learning to be more aware of man and his surroundings
11. Planning projects for next year.

The class decided upon three projects, thus two small groups were formed to take care of projects, while the third project was discussed in class and action taken. Each small group was to work out a plan of action in detail for the class to listen to, give suggestions, and carry out plan.

The projects were....

1. Field trip to the coast for a weekend
2. Ecology day for the school with the purpose of planting and clean-up
3. Litter clean-up in cafeteria, school and grounds

During class, the litter discussion came up because of litter in the cafeteria and on the school grounds. All of the group agreed that they would take care of their litter and trays in the cafeteria, in the building and on the grounds. Some said they would set an example by picking-up after people in the cafeteria who left their trays so students could realize their responsibility.

One student went so far as to ask another student to pick up the trash that the person has just emptied on the floor. While the student was picking up the trash, another reminded him of his responsibility in keeping Crescent Valley beautiful.

Small group (Second session)

The class was divided into two groups, each to work out detailed plans of a class project. Students chose the group they wished to work in. As material was prepared, and points came up for class discussion, time was given for this; then the final plan was submitted for class approval. This was the last class time set aside specifically for work on the project, however, as plans developed class time was given to complete the project.

Group One--Beach Trip

Let's follow through on the development of one plan which was a trip to the coast. A student teacher was a member of this group, however, the group was student-led.

The group felt there wouldn't be problems with any students. The expectation in conduct was discussed with the class. Then the committee appointed or rather decided they would have a committee to handle any problem that arose. The group felt that such a trip should become a tradition for psychology class.

Possible dates were suggested to the class. The place we were to stay was discussed as well as the cost. The group wanted to keep the cost of the trip to the minimum so that students could afford to go with the class.

The first major step was approval of the trip by the Board of Education since we were travelling more than fifty miles from the school. A small group collected data necessary, set objectives, and then wrote this material up to present to the board. A copy is attached.

Since we were driving private vehicles, teachers would need to drive; hence, the class selected two more teachers to accompany the group. One teacher was interested in oceanography and the second in communications.

The group planned a menu and asked the class for suggestions, so that students could have the kinds of things to eat that they felt was especially appropriate for such a trip.

Each phase of the trip was first discussed in the small group at which time they reached concensus, and then was discussed with the class at which time they accepted the recommendations, proposed other ideas and as a group came up with decisions. It was a happy time and every student could get involved.

Class (Third session)

The morning following the meeting of the Board of Education, students checked with the principal and learned approval had been granted for the beach trip.

A special class session was given to the small group to finalize plans for the trip.

It appeared almost as a miracle to watch the results of process as it developed into bringing the class into a closely knit group that could discuss of all things a menu and have such fun putting everything together in a project in which student has felt a contributing member.

All activities seemed to blend together while finalizing a menu and responsibilities. For instance, 1) games they could play and who would bring equipment, 2) who would bring what food, who would buy the rest, 3) who had responsibilities for cooking, doing dishes and other chores?

The fascinating part of the process was to watch things getting done without appointing committees. For instance, Marcia said: "I'll cook the breakfast as I make good French toast," and "I'll make the syrup. Who will help me?" Or Joy saying: "I'll make the spaghetti sauce, I make good sauce."...and so went the assignments.

To keep the cost to a minimum, options were provided. For instance, a student could bring food or pay the cost divided for the amount of food that was purchased. Bills were itemized and the cost was $1.10 per student.

The Rachel Carson project granted $50.00 to pay for the motel lodging.

THE MENU

Saturday

Breakfast at home — Leslie, Joy, Grant
Lunch--bring brown bag
Supper--Spaghetti--Leslie buy
Sauce--Joy make
Kool-aid, buy and make--Steve, Scott, Joe
French bread, Grant's mom make--also bring large kettle
Chicken--Sue can get without cost
EVERYONE BRING A DESSERT

Sunday

Breakfast--French Toast (bread)	Marcia and Randy
Milk--Randy	
Syrup--Marcia make	
Honey--Randy	
Jelly, applesauce--Gert	
Lunch--Weiners	
Marshmallows--Jack	
Buns	Debbie and Sherrie
Mustard and Catsup	

The beach trip provided an opportunity for many experiences that knit the class into a very close group. It was a blending of discussions, activities, sharing, etc., in which each felt comfortable with the other and the entire group.

Perhaps students express it best--

Marcia Gamble writes:

The beaches south of Yachats set the stage for a learning experience for students, teachers and parents. It was a people kind of project, devised by people, planned by people and participated in by people--people with one major thing in common, a desire to know each other and the world around them better.

It was not all ideal, smooth sailing. At first it seemed everyone wanted to go some place different. After much bartering and compromising for the good of the group, the ocean was set as the target. Letters were written, phones rang and permission requests were submitted with the end result being a weekend at the beach to be spent pleasantly learning about the coastal water ecosystems and about each other away from school and peer group pressures. Games were played and life, happiness and ideas were shared.

People grew on the inside (although the amount of food consumed might atest to a little exterior growth) learning about themselves and their relation to the world around them. Each one sought to find the place that they fit in with nature. Many observed the tidal habitats to a depth they had never taken the time to notice. The inter-action between life forms provided an example of harmonious co-existence--each creature dependent on the other for food, population control and in some instances protection.

The trip provided many opportunities for personal expansion and fulfillment. It answered many questions by giving chances to find the answers. It gave the basis for a new point of view of this beautiful world.

Saturday evening a large bon-fire was built on the beach and the group sat around it and talked. Later in the evening the talking was continued in the "wake room" set aside for those who did not want to

sleep but rather wanted to talk or listen to music, etc. An outcome of the evening's discussion is expressed by one boy--

I wanted to tell you about the talk that we had on the beach and in the motel on Saturday night.

We started on the subject of how a girl must try to live up to the stereotype women are like and how a boy must live up to the masculine stereotype. Mary and Sue both said that they felt these feelings around Helen because Helen is tall and slender and lovely. I said I had these feelings around a few boys in the school and that whenever I was around them I would just sort of clam up and feel sort of self-conscious.

Then the subject turned towards jealousy in relation to feelings of inadequacy and there was so much emotion here. Mary and Sue were both in tears and I really had to try hard not to be because it was so hard to talk about feelings that you consider ugly. Then Mary said a very moving thing to me. Helen and I had taken a long walk up the beach that day and Mary had seen us go and she said she really wanted to go with us but she thought that if she did she would just have bad feelings of inadequacy and inferiority towards Helen. She said she would have felt competition towards Helen, as a woman. And I wanted to hold Mary in my arms and weep because that was such a nakedly beautiful thing. Everyone (or at least Mary and I) feel feelings like that but I've never heard anyone voice them. It was simply beautiful.

We talked of how when boys and girls are together they feel they must fulfill their roles as men and women. I tried to say how I felt when I was with Helen that day. I felt obligated to help her over the little pools that she was perfectly able to handle, and really, I enjoyed playing my role but deep inside it sort of made me sick because I really knew what was going on, she was over-doing her role as a woman and I was over-doing my role as a man.

It was very noisy at the beach so we decided to go up. But while we were there at the beach, I felt that I really got to know Sue and I think she really got to know me. Anyway on the way up she turned around and gave me a big hug and said something; "Randy, I like you so much" or something like that and it made me feel so, <u>so</u> good. (Right here I feel I wanted to just blurt out that I love Sue and Mary and Guy and You and John and Gary and Joy and David and Mr. Byrd and <u>everyone</u> <u>so</u> much.)

When we got to the house we talked about how touching each other was so hard. And Mary said to me that sometimes she wanted just to hug me but she didn't quite feel it would be acceptable.

I'd really like to say how I feel about Gary and John and Sally and Grace but I guess I sort of have.

Grant Windon writes the four weeks that followed the beach trip:

I never thought that I would notice the time in my life when I would

change from a boy to a man, but I did. Though, I didn't realize the moment because it didn't take place in a moment. It took a day, four people and a beach to begin my growth and four weeks to realize what had happened.

In that one day these four people, two girls and two boys, showed me many things I had never seen so pure and so real before. They showed me kindness, trust, concern for others and a purpose for living life to its fullest capacity. They showed me that people aren't always as you believe them to be. You have to know a person to understand a person. They helped me to realize what I am and how important it is to be happy and at peace with myself.

In the following weeks, because of them, I began thinking about who I was and what I meant to other people. I gained confidence in myself. I realized that it was time to rely on myself for companionship but to still welcome others as companions and share with them the strength that I have found. All of this was and is not easy. I am not certain as to who I am. Many questions are yet unanswered. But I am certain that because of four people, the peace the ocean brought, and the circumstances of that one day, I grew then, and in the four weeks that followed, into a man.

INDIVIDUAL PROJECTS

Some students wanted to take their special interest and present something to the class in addition to class projects.

For instance,

Mike Barnes made arrangements for ordering, showing and returning two films that students of the ecology class suggested would fit in with our theme. The films were:

> Wild River 50 minute color National Geographic Society series. A trip down the Salmon River in Idaho. Conservation activities of the Craighead family.
>
> American Wilderness 51 minutes. Life style of the wilderness. Wilderness as a natural and essential resource. System for preservation, especially Wilderness Act of 1964.

.....

Suggested film for next year to add to the list:

> Wandering Through Winter 50 minutes. A 20,000 mile journey from Silver Sands, Colorado to the extreme Northeastern corner of the U.S. in winter. Scenic beauty, wildlife, extinction of species.

.....

David Papodapolous was interested in re-cycling activities and invited a speaker to spend two class periods telling of the project being carried on in Corvallis and what kind of articles they were collecting and what use they made of these articles.

.....

Barbara McKittrick, who reads a great deal, reported on Ernest Hemingway's THE OLD MAN AND THE SEA to show "the relationship between two beings and the earthly elements."

She writes....

The Old Man and the Sea is a tale about an encounter between an old man and a fish. Both are fighting for life, both are virtuous, noble and correct. Both are heroes, yet they must fight each other to the death.

The story is extraordinarily simple, it's words and it's meaning are basic. Hemingway has brought the lives of two magnificent beings down to their basic elements and with these elements they do battle until the fish dies. Hemingway wished to show the relationship between two beings and the earthly elements. He wished to make a statement about the harmony or disharmony of two different types of life which exist together and need each other, yet because of the nature of their beings and their life's purpose they must destroy one or the other.

In my opinion, the fact that the fish died is neither good nor bad, it just was. There was more than just life or death, there was a form of dignity and purpose. The fish must forfeit his life in order to perpetuate human life. The old man could not let the fish go when he became tired because if he were to do so, then there would be nothing to the old man. The man was fishing, his life's meaning was pacing his strength, wisdom, and wit against the sea and fish. The man loved and respected the fish and it is nice to think that possibly the fish understood in his own fish-way that this was the way things were to be.

The fact that the sharks were the ones who eventually ate the fish says to me that life is never ultimate. The destiny of things is not always as what it seems it must be. One could say that life is mere futility because nothing does any good for anyone anyway but, is all that the man and the fish went through lost? Was it all for nothing? I do not think so. The mere fact that it happened is justification enough.

I do not exactly understand why the boy cried in the end of the story. It made me feel better, almost as if I too, cried. I do not think tears were really necessary but, I suppose it was the only thing that the boy could do.

The Old Man And The Sea is a good book because anyone can read it. It can be read at any level at any depth of understanding. I really enjoyed it and I am happy that I read it.

.....

Grant Windon demonstrates his awareness of and appreciation for animals and relates this to people as he writes....

It is sad to want something badly and know that it is just beyond your reach. This is how I feel now. I feel it in more than one way. Yesterday I discovered where a buck deer lives. I approached him in a peaceful manner. I spoke to him and tried not to scare him. I was less than twenty yards from him but I could not get closer. After about five minutes he bounded away and I went on my way. I came back later, around dusk, and found him standing in front of me on a trail. I spoke to him again. We watched each other for a while and then he walked away. I continued to hunt for rabbits to feed the baby foxes I had found earlier. On my way back home I saw the deer feeding in a nearby field. I didn't bother him and he didn't pay much attention to me. He wandered into a clover field and I had to cross it so I walked toward him. He could hear me but could not see me so I made myself visible and told him who I was. He watched me approach. He was not afraid but he was still cautious. He would never let me get closer than fifteen yards from him. I really wanted to touch that deer, to pet him, and care for him. But I guess that these things just aren't possible.

People are the same way. There are two people I know of that I would like to talk to more often. When I approach them, something stands in the way. It is not the same for both I don't think. I want to reach out and touch these people and tell them I want to be their friend but it is just like the deer. They stay just beyond my reach. I can talk to them but I don't know if they see what I am trying to say or not. I guess some things are not possible.

SUGGESTED PROJECTS

1. Slide Show

   Chuck Holst, with financial help from the Rachel Carson grant, plans to purchase and have developed film. He plans on using the film doing a project for the Psychology class next year as he travels this summer.

   Plan of Action

   To take slides of beauty in his travels this summer and write poetry to go with the slides to make them more meaningful. A musical background will also be included in his presentation.

   Objectives:

   1. To develop his own awareness of the beauty surrounding him.
   2. To share this beauty with others in psychology class.
   3. To add greater feeling to presentation by using music and poetry.

2. Fund Raising

Jeff Potts felt we should earn our own money for class and could do more things that would be helpful to class members in this unit.

He suggests the following:

To collect beer cans, etc. for re-cycling.
To collect newspapers in hopes they can be sold again.
To collect scrap iron and sell.
To collect glass and sell it.
To plan a project and see if there is a possibility of funding.
To have a white elephant sale.
Other suggestions would come from students.

3. Beach Trip

Students felt the class as well as the individuals within the group gained a great deal from the beach trip and would like to make it an annual affair.

EVALUATION

When people are aware of the beautiful and learn to appreciate it, then the environment becomes more meaningful to them.

Usually we take better care of what we value and are often more willing to contribute to its support.

Hence we set objectives with that in mind.

Each of the following was improved upon in varying degrees, depending upon effort expended and personal commitment of the individual through his own actions as well as in his group.

1. The beach trip seemed to be the key in awareness of beauty in nature, people and even oneself. Student papers written following this experience indicated such was the case. Not only the hikes and doing chores together, but the discussions helped develop a keen appreciation of each person's uniqueness, yet a welcome member of the group.

2. Perhaps the most frustrating for student and teacher was letting groups run with ideas. This resulted in dissatisfaction at first, but once the griping was over, ideas emerged, plans developed and were carried through by the group involving the class. This is a normal part of the process and the teacher needs to let students direct anger at her without becoming involved, for the end result will be student ideas and then responsibility for development.

The discouraging part of the unit was the two students who felt they knew so much about ecology, nothing was worth doing. However, several

students had been active in Ecology Projects and saw many ways to broaden their interest with a different approach.

As one student said in his evaluation--there was a great deal he could have done to make it more interesting for others but he was fed up with ecology, perhaps fed up with his own lack of involvement with others.

We have developed the basic pattern of an ecology unit and hope in the next two years to improve the unit so every student will learn to run with ideas and become more aware of his own creativeness.

This has been a frustrating but fun experience. It has helped us to appreciate each other more and to seek beauty and then share it with others, even be responsible for its care. This should stimulate greater action in involvement within the field of ecology.

Students felt this unit was very meaningful, perhaps because they developed the plans we followed.

APPENDIX A

March 29, 1972

School Board
Corvallis Public Schools

Members of the School Board:

The Psychology class at Crescent Valley High School has proposed the following objectives for a field trip to Gull Haven, south of Yachats on the Oregon Coast.

The class would like to go to the coast to complete their studies in Ecology.

Date: Weekend of April 22 and 23rd. Departure time will be at 8:00 a.m. from Highland View Junior High School on Saturday and returning at 6:30 p.m. to Highland View Junior High School the following Sunday.

Transportation: The following people, staff members at Crescent Valley High School, will be driving private vehicles, providing transportation for all who attend the trip: Joe and Dean Pielstick, Jack and Marion Whitney, Steve Byrd and Gert Branthover.

Objectives: The main purpose of this weekend retreat is to further our appreciation of nature and ecology and to facilitate better interpersonal relationships within Psychology class. We feel that the trip would provide an opportunity to concentrate our energies toward these objectives.

Included in the program for the weekend are the following activities:

1. Tide pool exploration: Jack Whitney, whose major field of interest and study lie in oceanography, has offered to take interested students on explorations of tide pools during low tide.
2. Observations of eco-systems: This would include observations of life in estuaries and on rocky beaches. Relationships between environment and animal and plant life would be observed and then related to human beings and the world of men.
3. Appreciation: The value of appreciation towards nature and the positive role that such an attitude plays towards responsible usage of our natural environment will be stressed.
4. Relationships: Coming to know and appreciate each other more. We hope to achieve this through (1) small group discussions (2) hiking and enjoyment of nature (3) and sharing of the responsibilities and chores involved in such an outing.

Barbara McKitrick
on behalf of the Psychology Class
Crescent Valley High School

APPENDIX B

From page 1 of the Crescent Crier, school newspaper, April 28, 1972:

PSYCH. CLASS VISITS COAST

Gert Branthover's second period psychology class ended their ecology and nature appreciation unit with a two-day excursion to the beaches south of Yachats. Seventeen juniors and sophomores made the trip. Mr. and Mrs. Steve Byrd, Mr. and Mrs. Jack Whitney and their son Danny, Mr. and Mrs. Dean Pielstick and their son Eric, and Gert Branthover also participated.

Upon arriving at the beach, the class probed some of the tidal pools, played volleyball and football, cooked a spaghetti dinner, built a large bonfire and roasted marshmallows. The morning activities included clam digging, cooking breakfast, rock climbing and tide pool exploration.

To the class the trip was valuable in human appreciation as well as nature appreciation. Participants stated that they developed confidence and trust in each other and in themselves. Age barriers were broken down as adults and students worked, talked, and played together. In sharing chores, games and ideas, the members of the group felt that they became closer and more appreciative of each other as individuals, not as members of a grade, class or age group. The natural wonders of the coast provided yet another opportunity to grow and learn. Among the common crabs, limpets, snails, anenomes and starfish, explorers found sea urchins, sea slugs and various small fishes. Two seals were sighted early Sunday morning. The food chain and the interaction of life forms provided another source of learning.

The two-day trip provided many opportunities to grow and learn. The class hopes that this trip will be made an annual event.

TYPING AND ECOLOGY

by

Marjorie Sutherland

and

Diana Glenn

Editor's Note: The typing classes at Crescent Valley High School provided a beautiful example of a basic premise of the Rachel Carson Project: that regular course objectives and project objectives should be met concurrently and with the same activity, whenever possible. This becomes clear as, in the following account, our [illegible] business teachers describe no fewer than six discreet activities which--in one students' words--"connect ecology with our regular classes."

As is noted elsewhere in this report, the term "ecology" is sometimes used here in its current popular sense, a fact which a few readers may find objectionable. We have chosen to retain the term as it was used by the writers.

The student responses have been reproduced with only the lightest of editing at most, in order to retain their charm and integrity.

Ecology became a part of the typing classes at Crescent Valley High School during the year of 1971-1972. Students have become involved in the study of ecology by doing the following:

Classes would warm-up by typing the first word that they thought of in response to a word about ecology given from the teacher. An example of the words would be: snow, camping, alligator, green, rain, skiing, birds, eagle, etc.

Students then would be asked to compose a paragraph describing their feelings on different ecology subjects. For example, the students would be given the word "pollution" and then given 5 minutes to type, erasing errors. An example of several paragraphs are included in his report.

Students enjoy expressing their opinions in the paragraphs. Several paragraphs were selected and read to the class the next day. The class would discuss the subject openly with each other or in small groups.

After the typing students had developed a skill in typing letters, the class decided they wanted to compose their own letters to agencies that were studying or working on ecology asking for information from them. Students selected the address of a place where they wanted to write and were interested in receiving results from their letter.

During class time, the class discussed how to compose a letter requesting information. After listing several sentences that the students could use to begin their letters, they were left on their own to develop the letter that expressed their ideas. After the students were happy with their letter, they typed the letter on Crescent Valley stationery with one carbon copy of the letter for their records. After the envelopes were sealed and mailed, students were anxiously awaiting the return of information.

Within a week the replies started to come. Students each day would anxiously ask if they had received any mail. The students were very excited when they would receive their information. Each day we would discuss what types of information were received in the mail. The students were always pleased when they received a personal letter addressed to them, instead of a form letter.

Approximately 75% of the 80 letters sent received information or an answer to their letter. Some students wanted to keep the material they received and others donated the information to be used in an ecology library at the school. Students were asked to take the information home with them and discuss the information they received with their family and friends.

As a result of this type of experience, the teachers in the business department have decided that students in first year typing should send letters in future years requesting information. The students enjoyed this type of assignment.

Students were given an article from Audubon magazine to use for timings. The students were asked to read the article, then the class discussed

what the article said. After the students were familiar with the article, they used it for 5-minute timings. They were encouraged to use the article as a timing for at least one week.

After a unit on how to type rough draft materials was taught, students were given another article from Audubon to read and type. The article was to be typed the first time without erasing any errors on their copy. The students then retyped the article, erasing errors from their own rough draft article. An assignment of this type increases the students' knowledge in ecology, as well as in how to type from rough draft composition.

Book reports that students had written for a chemistry class were typed from rough draft copy on ditto masters. The reports were typed on masters so that multiple copies could be run off. An assignment of this type gives the students an opportunity to type on masters from rough draft copy. They were interested in the information about books on ecology.

Typing students were always encouraged to type assignments relating to ecology that they were asked to do for other classes. For example: If a student was required to do a report for the human ecology class, the same assignment could be used in place of an assignment for a report in a typing class.

APPENDIX

Contents:

Audubon articles ("Econotes")
Selected student responses to key words
Selected student letters requesting information

ECONOTES[1]

A Colony of California Condors May Exist in Mexico

The endangered bird, whose numbers in the United States are believed to be less than 60, was sighted by a search party early in the summer in the mountains of north-central Baja California. While no photographs were obtained, four condor feathers and the great vulture's tracks were discovered. For some time rumors had persisted that condors were surviving in Baja, but several expeditions had been unable to locate the birds. Scientists were to return this fall to get an idea of the numbers of condors in Mexico, and the Mexican government has pledged its cooperation in setting up a condor sanctuary. Meanwhile, the condor's tenuous sanctuary in the Los Padres National Forest of California is under a new threat--from U. S. Gypsum Company, which wants to rip up four miles of the hills to exploit a phosphate deposition which it holds claims under dangerously antiquated nineteenth-centuary mining laws.

Maine Has Turned Away a Refining Company

Maine has turned away a refining company that was seeking to build a fuel oil desulfurization plant at Searsport, on Penobscot Bay. It was the third time the company, Maine Clean Fuels Inc., and its parent firm, Fuel Desulphurization Inc., had been turned away by seaboard cities. Maine's Environmental Improvement Commission held sway over the Department of Economic Development, which favored the $150 million industry, on the grounds that it would expose one of the most beautiful sections of Maine's coastline of continual danger of oil spills. The company said it was considering taking its case to the state supreme court.

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[1] Roxanna Sayre (editor), "Econotes," Audubon, September 1971, pp. 112-113. Reprinted with permission of National Audubon Society.

ALLIGATOR SHOES

To me, alligator shoes are a good example of people's wasteful attitude towards our animal friends. Is it ever really necessary to have a pair of alligator shoes? I can't think of an instance in which a person really needed those alligator shoes. I think maybe the alligator needed that skin a lot more than the people that bought the shoes!

.....Sandy Trimble

Alligator shoes are the most ridiculous thing I have ever heard of. Alligators were put on this earth to do good things in the swamps of Florida and they were not meant to be made into shoes. Some people like alligator shoes, it may give them a feeling of goodness to know that some "ferocios beast" has been killed so that someone like themselves camn have a pair of alligator shoes.

Alligators are not very harmful! If anything they are helpful. They keep the swamps clean of decaying materials such as: maybe a cow died and fell in the river, the alligator would no doubt eat it to keep the river clean.

That is all I have to say on the subject.

.....Jean Yates

Alligator shoes are fashionable, but did you ever stop and think what it is doing to the Alligator. It's destroying a great animal. He is great because he eats matter that would otherwise clutter up the river that he lives in. He also digs holes in the river bed that will hold water in during the summer when the river is down so other animals can have water to drink. That's why I think that Alligator shoes should be abalslese.

.....Marshall G.

EAGLES

I like them. They are our National Bird!
But today they are almost gone, from the face of the earth! We need to help them in every way.

BEST COPY AVAILABLE

One way would be to ser higher finds for killing them, or harming them! Also we could feed them, like give them vitaimans for making them stronger!
We need to help Them...Because once gone always gone!
Thats the way I feel, and I whised others did too!

.....Marcie Burrus

Eagles not only are our national bird but are very magnicent animals, their beauty, and their pride--they are "king" of the wild.

There are several different kinds of eagles, the Bald Eagle is one and the Golden Eagle is another. Both of these bids once were common and had little to worry about but now they are in dager of extintion. I feel that it is bad to have this happened.

.....Holly Tyson

RAIN

It's raining outside again! Every time I turn around, it's raining outside. Cars are sliding on the road, the dust settles, the cattle are moving into the shed to get out of the rain, the trees smell good and clean, everything is dark, the pavement smells new. Everything is clean again! After two weeks of sun, dust, and sweat, everything is clean again.

The thunder roars, what a wonderful sound. The lightning cracks, what an interesting time to ride horeses through the fields. I like storms when they are nice to people but one must remember that God has reasons for rain, storms, and the destruction of property. Everything has a place and a purpose.

.....Jean Yates

Rain is something Oregon has a lot of. I don't really mind tho', because I like the rain. I think it is a lot of fun to walk in the rain, even if you do get a little wet. It's also fun to take the horses out in the rain. It's hard to see where you are going tho'.

The rain also makes everything green. Besides, it's pretty to watch the rain falling on the trees.

I guess I'll stay in Oregon, because I really like the rain!

.....Roberta Sager

Rain is the power of Nature in her glory. As the silver drops of sunshine fall to earth a warm glow of appreciation fills my heart. For in rain, I can find serenity and peace. All the world stands still and my mood drifts into quiet satisfaction. There is suddenly nothing to fear, nothing to trouble one's heart. For the day has become relaxed and beautiful. Truly, for me the rain <u>is</u> the power of Nature in her glory.

.....Janet Orner

WASTE PAPER

I have been saving mimiographed paper for two years now. I think that this recycling of paper is an excellent idea. For during these two years I have cut my use of line paper in half. This saves money, for whenever I need scratch paper, for example in Math, I just pull out the mimiographed paper and do my figuring on the back. This school must have bundles of left over mimiographed paper; perhaps it could be supplied for typing paper in this class!

.....Connie McCarthy

On the topic of waste paper I might be considered a little knalligeable. I work in the office and am asked just about every day to run papers off for the seceratrays. If it isn't just perfect I put them in a box which is suppose to be used for scratch paper. Right now there is enough paper to last till spring 1999. It is a good idea to use both sides of the paper but the questions is will we do it.

.....Terise Carpenter

TREES

Whenever I see a fir tree, I cannot help but think of our summer home in the Cascades. Usually during the hot summer ever weekend we head for the mountains and our cabin by the lake. Walking in the forest, especially in late August or early September, everything smells so sweet and dusty. The smell is from the pitch or the trees. There also Alder trees by the lake that turn their leaves to silver in the wind.

.....Connie McCarthy

Trees are one of the most beautiful works of nature. The different shades of green in the summer and then the most gorgours shades of orange, reds, golds and yellows. In the winter their naked brances reaching to the sky like longing fingers, waiting for spring again.

.....Craig Churches

ECOLOGY

I think ecology is great because its the way to world peace. Every country in the world is concerned about its own environment. The U. S. and Canada got together over the Great Lakes Clean-up. The scientists from every country of the world are working to clean up our world. If we can all work together to clean up our environment we can all work together to keep it that way, in peach.

.....Debbie Schlosser

Nowadays you hear everyone talking about pollution, crime, slums, and crowded cities. To me, the problem is obvious. I really believe that there is one cause for all the problems. There are simply too many people for this earth. I think that most of the world's problems would be eliminated if people were to realize how many problems they cause by having children, especially more than two!

.....Nancy Converse

As a native of the Midwestern United States, Oregon has a special wonder for me. Mountains, oceans, lakes, valleys, rivers, and deserts are all within a day's drive. With all this variety, I find it hard to be bored even on a ride to school! The one thing that worries me about all the beauty of this state is the pollution problem. With any number of people using any given area there is always a certain amount of disruption to the environment but with care this could be kept down to a minimum. I believe that a growing number of people are becoming aware of the problems but not enough. If we could find some effective way of reaching all people with a sincere plea for conservation, and an environmental concern a larger per cent of the population might take a little pride in a lad that so many take for granted. One of the most effective means of educating the people is through the small children. Parents start to think about being more where they throw their garbage and start recycling bottles, cans, and paper when their children express an interest in these things. I have been lucky in learning about the wilderness and ecology, my father is very conservation minded. I just wish that all people could be as concerned and dedicated as my father. He has been a great help in my learning to appreciate natural beauty.

.....Martha Vohs

People come from far and near to settle in the fertile green valleys of Oregon. Little do they realize, they could be the cause of starvation. If everyone all over the world moved to the valleys where would the farmers grow their crops? Or the ranchers raise their livestock? Some say "Oh, well, our family is only going to take up one house," but what if everybody thought that way? The valleys are the places where the farmers settle because the ground is soft, the soil is fertile and there is plenty of level ground and rain for crops. Although the hillside homes are more expensive, would people rather starve or pay a little more for a house?

.....Wendy Smith

DEPOSIT?

Today's world is full of "no deposit and no return" items, like never before. We have to stop now or we'll just get further in the hole. I myself use to go around and pick up pop bottles and beer bottles for a penny or then it was three cents. But now that they are worth nothing, and no one wants to go around and pick them up for free and hav't to pay to get rid of them. I think now is the time, and we should reinforce our law on making any more non-returnable bottles or cans.

.....Marcie Burrus

NOISE

Noise, that's the stuff that's constantly bombarding ones ears. It is getting to be a really big problem that effects everyone. I'm sure that there isn't a single person who can say that some kind of noise hasn't bothered them. There are automobiles, which are the major source of noice, and construction sites. The forest isn't spared either. There are snowmobiles in the winter and chainsaws, motorcycles, and outboard motors in the summer. In fact if noise keeps increasing at the present rate (1 dB-A per year) the entire population could be deaf by the year 2000. With this growing problem something needs to be done. But it can only be done with a shifting of priorities and a lot of work. It's not going to be easy, but to me it's worth my sanity and hearing.

.....Diane Williams

March 9, 1972

State Game Commission
P.O. Box 3503
Portland, OR 97330

Gentlemen:

Our school, Crescent Valley, has been awarded a grant of 30,000 dollars by the US Office of Education. This money went to what we call the Rachel Carson Program. The object of this program is to study ecology and environmental issues. I myself, as a concerned student and sportsman realize the importance of our fish and game resourses; this is why I write you.

Recently there have been many articles out about the condition of our deer herds; on the most part they have been unfavorable. The mortality rate was reported to be way up. Some have said that it is due to the great increase in coyotes and others say it is due to poor winter conditions. But which ever one it is it's not good.

Would you please send me information containing the facts on this issue. This will be greatly appreciated and benefited from.

Please send this to:

Steve Winterstein
c/o Mrs. Diana Glenn
Crescent Valley High School
4444 Highland Drive
Corvallis, OR 97330

Thank you for your time and patience.

Sincerely yours,

Steve Winterstein

March 9, 1972

American Forestry Association
919 17th Street N.W.
Washington, D.C. 20006

Gentlemen:

At the beginning of this year, Crescent Valley High School was granted $30,000, in the interest of ecology. The grant, known as the Rachel Carson Grant, was given to us from the United States Office of Education. Now, as a result of this grant, many classes are studying our ecology.

This letter is a request for information for myself, but it is something that concerns everyone. I would like to know what steps are being taken to inform the public that the act of clear-cutting is actually a benefit, and not just an eye sore. The information, after I have looked at it, will be given to the school's library for the use of other students.

I would appreciate it if you would send the requested information to the following address:

Mary Holder
c/o Mrs. Diana Glenn
Crescent Valley High School
4444 Highland Drive
Corvallis, OR 97330

Thank you very much for your aid. This is a matter of personal interest to me, and I feel that it should be also of public interest.

Yours sincerely,

Mary Holder

March 13, 1972

National Park Association
1701 18th Street, NW
Washington, DC 20009

Gentlemen:

I am writing this letter as a project for our typing class. The school that I attend has been given a $30,000 grant by the U.S. Office of Education for the Rachel Carson Project. We are using this money to connect ecology with our regular classes.

This summer my family and I will be traveling to Minnesota. Instead of staying in hotels, we hope to take our tent and camp along the way. I would appreciate it if you could send me any information you have on the national parks located in this area. A map would be especially helpful since we have not been in this area before.

Would you please send this information to the following address:

Sheila Olsen
c/o Mrs. Diana Glenn
Crescent Valley High School
4444 Highland Drive
Corvallis, Oregon 97330

I would appreciate a reply as soon as possible. Thank you for your cooperation.

Yours truly,

Sheila Olsen

Sheila Olsen

March 9, 1972

Bureau of Land Management
Mr. Edward G. Bygland
710 N.E. Holladay Street
Box 3861
Portland, OR 97208

Dear Mr. Bygland:

Our school, Crescent Valley High, recently received a grant from the U.S. Office of Education in the amount of $30,000 which is to be used for the study of Ecology by the students of Crescent Valley. Much of the money has been used for field trips and research projects.

I would appreciate any information you could send me on the effect of pesticides such as DDT on the land and on plants. Any information that is not used by me will be given to the classes that are most interested in this area of study, or to the library. Any other information you have on Land Ecology would be appreciated and can be put to good use.

Please send any information you can to the following address.

Rhonda Vandecoevering
c/o Mrs. Diana Glenn
Crescent Valley High School
4444 Highland Drive
Corvallis, OR 97330

Thank you very much for all of your help.

Yours sincerely,

Rhonda Vandecoevering

ARCHITECTURE

Editor's Note: In the architecture class of industrial arts teacher Charles Honey, two student teachers developed units in cooperation with the project director.

During Winter term, Larry Kirkpatrick developed a brief unit which he entitled "Environmental Living," emphasizing building plans which were conserving of materials, easily heated (and thus also conserving of materials), and so forth. Special emphasis was placed upon the geodesic dome, a structure with which Kirkpatrick was not well acquainted prior to his association with the project director. Domes, invented by R. Buckminster Fuller, are meant to combine maximum strength with minimum material. Kirkpatrick also developed a certain amount of background on Fuller himself, and consulted with the project director on this. Fuller is one of those men variously credited with coining the term "Spaceship Earth," and in his work has constantly sought to remind us of the finite nature of the earth's resource base. Unlike some of his contemporaries, however, he is quite optimistic regarding the extensiveness of that resource base, provided that we develop it much more efficiently--much less wastefully--than we have been doing.

As indicated in Kirkpatrick's enclosed unit plan, he used various printed materials to illustrate the economy of design and farsightedness which has long typified Fuller's design. (For background on Fuller, see not only the works used by Kirkpatrick, but the Reader's Guide to Periodical Literature--numerous popular magazines have carried articles on Fuller in recent years.)

Since Kirkpatrick's plan represents notes as he wrote them for his own use, they are probably not 100% meaningful to any given reader. Nevertheless, they were judged worthy of inclusion because they do convey the general objectives and development of the unit, as well as some specific information and references.

In Spring quarter, student teacher Paul Smud taught a unit on landscape architecture (his undergraduate major). At the behest of the project director, and because of his own knowledge and interest, he included development of the concept that indigenous species can provide an aesthetically pleasing "natural" setting with a minimum expenditure of

human energy, materials, fertilizers, watering, etc.

Also, in developing a history of landscape architecture in various cultures, Smud concentrated on the work of Frederick Law Olmsted when dealing with the U. S. Olmsted, the designer of New York's Central Park, was far ahead of his time in recognizing and fighting for the need of open space and natural space for the welfare of city dwellers. One reference which places Olmsted in proper perspective in the history of American conservation is Stuart L. Udall's The Quiet Crisis, 1963, Holt, Rinehart, and Winston (hard cover) or Avon Books (soft cover).

As a result of the work of these two student teachers, Mr. Honey has become interested in making increased use of environmental-ecological concepts in his architecture class in the future. He has recently purchased the following materials with this objective in mind.

SURVIVAL THROUGH DESIGN; Richard Neutra. Oxford University Press. New York. $2.95

THE CONCISE TOWNSCAPE; Gordon Cullen. Van Nostrand Reinhold Co. New York. $3.95

THE LAST WHOLE EARTH CATALOG; Menlo Park, California. $4,50

STRUCTURAL POTENTIAL OF FOAM PLASTICS FOR HOUSING IN UNDER-DEVELOPED AREAS; Agency for International Development, U. S. Dept. of State. Architectural Research Laboratory, University of Michigan, Ann Arbor. $5.00

DESIGN WITH NATURE; Ian McHarg, Natural History. $5.95

The last of these books is perhaps the best known; McHarg's methods have helped inspire a new wave of interest in resource-based regional planning in this country, at least in university departments of architecture.

Unit Plan, Architecture

Environmental Living

By Larry Kirkpatrick

Purpose: To show students possible changes for better living environmentally.

Objectives:
1. The student will use proper environmental considerations in designing houses.
2. The student will discuss in class environmental methods for improved living.
3. The student will take into consideration designing a geodesic dome, instead of a conventional rectangle house.
4. The students will evaluate each material put into a geodesic dome or home.

References: R. Buckminster Fuller, John McHale, George Braziller Pub., New York, 1962
Dome Book II, Published by Pacific Domes, 1970
Geodesic Building Concept, Cathedralite Domes, P. O. Box B, Daly City, Calif. 94015

Materials: Pictures

Procedures:
1. Discuss with students possible areas of house designing to change or add for environmental living.
2. Present dome type structures.

Preparation: Teacher read background material.

Presentation: I. Possible house planning.

A. Fireplace
   1. Air pollution
   2. Burning wood - or waste
   3. Dries homes
   4. Inefficient heat

B. Solar energy
   1. Only non-polluting energy source.

C. Tapping underground for hot water heat.

D. Wind power to turn generators.

E. Can crusher in kitchen

F. Location of sewer
   1. Drain-Pollute creek, pond, etc.
   2. City-Pollute lake, river, etc.

G. Water from well in relation to sewer
   1. Diseased water

H. Questions

II. Geodesic Domes:

A. Structure as opposed to conventional rectangular house.
   1. Economical
      a. $10 per sq. ft. -- $14 per sq. ft.
      b. $35 up.
      c. 3 per cent of conventional house.
      d. 1 - 40 year old tree can build a 24' dia. dome.

   2. Savings between $14 - $10 / sq. ft.
      a. Building permit
      b. Loan and interest
      c. Property tax
      d. Others
      e. Add over a 25 yr. period save about $25,000.

   3. Stronger
      a. Triangles are structurally stronger.
         1. Corners constrict mind, domes break into new dimensions.
      b. Snow zones
      c. Wind 110-mph
         1. Radome of Arctics

   4. Designs (Passout <u>Geodesic Building Concept</u>.)

   5. Uses
      a. Churches
      b. Open air schools
      c. Swimming pool cover

B. Structural difference
   1. Dyna Dome
      a. Struts join in common vertex

   2. Cathedralite
      a. Pre-built triangles bolted together.
      b. 16" centers

3. Oregon building code allows Cathedralite domes only
4. Calif. allows both

C. Types of siding materials
   1. Concrete
      a. Wood frame
      b. Chicken wire
      c. Concrete
      d. Take out wood frame
      e. 34' dia. $2750

   2. Plastic
      a. Breaks
      b. Clear - scratches

   3. Fiber-glass
      a. Hard building

   4. Metal
      a. 1 roll, 600 lbs, 4' high, 3' dia., made (2) 24' dia. domes
      b. Standing seam
      c. Clip punch
      d. Pop rivets
      e. Spot welding
      f. Cross break each panel gives sphere look.
      g. 1 pile of triangles 1' thick 5' sides eq. 1 dome
      h. 50-60 mph winds
      i. Heavy load pop insulation
         1. Flex

   5. Plywood
      a. Feeling of strength over plastics or metal
      b. Paint
         1. Reduce lamination separation
         2. Porcupines eat for glue--has salt

   6. Conduit framing

   7. Car top domes

   8. Some people don't like shiny plastic or metal.

D. Insulation
   1. Urethane

   2. Foam sprayed on inside

D. Insulation cont.
   3. Transparent windows loses heat in winter and heats too much in summer.

   4. Domes are easier to heat because of dome radiating heat evenly.

   5. Western Domes Inc. or Corvallis
      a. Trying to pass through for code.
         1. Paper company will make pre-made triangles out of paper.

E. Sealant
   1. The roof and walls are continuous and, therefore, care must be taken for proper sealant.
   2. GE slicone 1600, elastron tape, aluminum foil tape.
   3. Bolt together, calking compound
      a. Start from top

F. Windows
   1. Can be put anywhere
      a. Arch over top
      b. Star gazing

G. Fire
   1. Extremely dangerous
   2. Fiber glass even more so

H. Interesting point
   1. "It may be that trees and wood can be replaced easier than the minerals and petroleum products can be replaced from their exploitation." Dome Book II, p. 19.

I. History (Pass out book Buckminster Fuller)

   1. Dymaxion House 1929 Plate 6
      a. Two floors suspended by wire on a mast
      b. Central core lighting and plumbing

   2. Flexible dividers for walls

   3. Automatic laundry and dishwashing (which dried and returned object to shelves)

   4. Incinerator and disposal unit

   5. Folding doors (Photo-electric cell operated.)

I. History, cont.

6. Compressed air and vacuum units
7. It takes 15 gal. of water to dispose of 1 gal. waste. Dymaxion house packaged waste.
8. 1936 plug-in bathroom (Plate 9)
   a. Dropped quickly, due to opposition from plumbers union.
   b. Could be used in new house when moving.

Evaluation: None

Notes: Follow up to Environmental Lesson Plan.

After the presentation a couple of students were sufficiently interested in the subject to stay after and ask a few questions. I took some polaroid pictures of a geodesic dome in construction. These were very interesting to the students. I believe that they would enjoy a field trip to look the dome over more closely.

A few students changed their floor plan to include environmental ideas brought out in the presentation.

The can crusher went into the kitchen in three-fourths of the plans and a gas line went into the fireplace for a possible fake fire.

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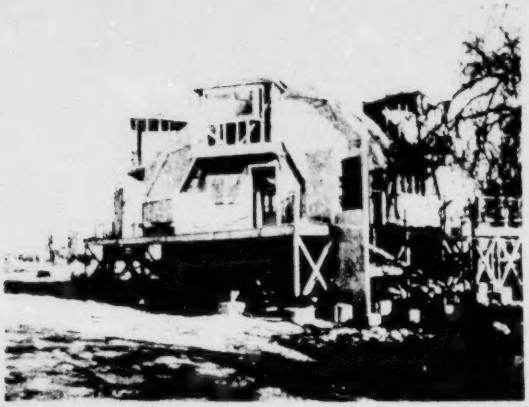
CATHEDRALITE DUPLEX

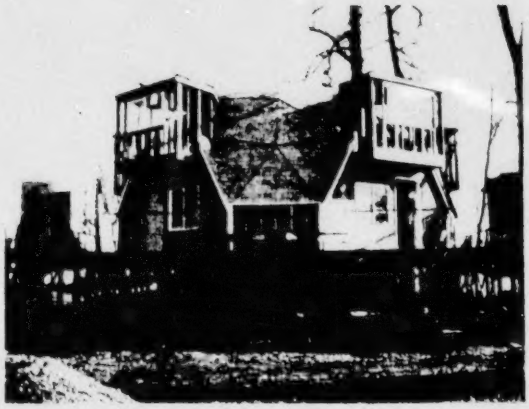
39' Diameter

Corvallis, Oregon



Half of Duplex

Division between apartments is in middle of picture



MODERN FOREIGN LANGUAGES

Editor's Note: The three teachers of foreign languages at Crescent Valley High School were especially kind in extending their cooperation and in volunteering ideas for participation. We have probably just begun to tap this resource, since foreign magazines and press are apparently carrying many environmental articles now, as are our own.

RACHEL CARSON PROJECT: FRENCH

By

Olivia Dorman

49/50

French I and II classes participated in several ecology-inspired projects during the 1971-1972 school year at Crescent Valley High School.

The French II class first took part in a teacher-directed activity about ecology. The teacher chose an article from the February, 1971, Chez Nous, for the basis of the project. The instructor planned to accomplish three main objectives with this article. These objectives were: 1) to make students aware of French ecology problems; 2) to teach students ecology vocabulary in French; 3) to develop students' listening and comprehension skills in French.

In order to accomplish these goals, the following procedures were adopted. The teacher first lectured in French, giving a general background on the French ecology situation and introducing key vocabulary words to the students. Then the students were given a page of eight questions which they were to answer by listening to a recording in French of the article. When this questionnaire was completed (a copy follows), students were then given the article to read. They were asked to note all vocabulary words having to do with ecology. These words were listed on the board, discussed and assigned to be learned. At this point, the students played French charades with these same words. Teams acted out one of the terms and the other students tried to guess what the word was.

Samples of the article, questionnaire and of student work on this project follow:

Nous, les assassins! *

Nous des assassins?
Non!
Si! Nous sommes tous des assassins! Au cours des siècles, nos victimes ont été des animaux, des oiseaux, des arbres et des fleurs.
Notre prochaine victime, c'est nous-mêmes.
Au nom du progrès, nous détruisons notre monde: la terre, l'atmosphère, I'eau. Détruire le monde, c'est détruire I'homme.
Les grandes entreprises industrielles, les installations chimiques, les autos, les avions...-en principe là pour aider l'homme -- vont en réalité, le tuer.
Le grand problème d'aujourd'hui, c'est la pollution.
Heureusement, l'homme s'est rendu compte du problème et cherche à le résoudre. Parmi les solutions déjà trouvees, il y a la création des parcs nationaux et regionaux.

---

* Chez Nous 5, Fevrier 1971, pp. 4-5. By permission of Scholastic Magazines and Mary Glasgow Publications Ltd., London

En France, ces parcs, créés par la loi du 22 juillet 1960, couvrent un million et demi d'hectares. Leur but, c'est de protéger la nature. Et protéger la nature n'est pas un but futile. Proteger la nature, c'est protéger l'homme.
Par exemple, le gaz carbonique -- produit par les autos et les avions -- empoisonne l'homme. Ce même gaz, cependant, est nécessaire aux arbres. Voilà une bonne raison pour faire pousser des arbres. Mais les arbres sont tués par des insectes qui, à leur tour, sont tués par des oiseaux. Il faut donc protéger les oiseaux. Faire vivre les oiseaux, c'est faire vivre les arbres, c'est faire vivre l'homme.
Il y a des parcs nationaux et régionaux partout en France: dans le Nord, en Bretagne, dans les Pyrénées, en Savoie, en Camargue....Tous ont le même but: proteger la nature. Dans les forêts du parc des Pyrénées, il y a des ours -- les derniers de France -- des chats sauvages, des martres. Grâce au parc camarguais, taureaux, chevaux sauvages et flamants roses sont maintenant sauvés pour toujours.
Le public est encouragé à visiter ces parcs. Dans le parc des Landes, on peut faire des promenades en canoë; dans le parc du Nord de la France, il y a des terrains de camping et des centres sportifs; en Savoie, c'est le ski. Et voilà le deuxième but de ces parcs: apprendre aux gens à aimer la nature!

QUESTIONNAIRE

francais II
l'ecologie 21 points

Répondez à ces questions en francais dans une phrase complète:

1. Quel est le grand problème d'aujourd'hui?

2. Qui sont les assassins?

3. Quelles sont les solutions déjà trouvées au grand problème d'aujourd'hui?

4. Est-ce que le public peut visiter les parcs nationaux et régionaux de la France?

5. Quel est le deuxième but des parcs?

6. Nommez une région en France où se trouve (is found) un parc.

7. Qui ont été les victimes des assassins?

8. Est-ce qu'il y a des ours en France?

This is a sample of the work done by French II students in response to the questionnaire. This paper was completed by Miss Abigail Firey.

1. Le grand problème d'aujoured'hui est la pollution.
2. Nous sommes des assassins.
3. Les solutions are grand probleme sont planter plus d'arbres, avoir plus du parcs, et ne servir pas beacoup de voitures.
4. Le public pent visiter les parcs nationaux et regionaux de la France.
5. Le deuxieme but des parcs est le protege' de l'homme. La première but est le protege' da la nature.
6. Un parc se trouve dans les Pyrenées.
7. Les victimes ont été les animaux, les arbres, les oiseaux, et les fleurs.
8. Il y a des ours en France. (pas beaucoup, mais un peu.)

At the same time as this project was carried out, a bulletin board display about the Camargue region in France, which was mentioned in the Chez Nous article, was set up. Later on during the year, another bulletin board display was prepared by an individual student, Miss Carrie Werth, who was working on her "option" or independent study project in French II. Following is her description of her project:

I chose the subject of ecology for my bulletin board in French because people are interested in the environment now-a-days and I thought people might like a bulletin board on it. I was limited as to what I could say because I am only in second year French and only know so much.

On one side of the board I had pictures of pollution and the other side pictures of nature and a clean environment. At the top of the board, in French, I put:

- Nature against Man -
Who will win?

My caption was as follows, in French:

The problem of pollution today is very serious. We must do something right away or we will destroy our world. If we destroy our world we destroy ourselves. To solve our problems of pollution we need money and people who care, not apathy. Think about it. Do something today for ecology.

The Chez Nous article was used with the French I classes at the end of the year. The objectives here were to develop student reading comprehension and to expose students to French ecology vocabulary. The procedures used for accomplishing these goals were to divide the classes into two groups, each with a teacher or aide to help in the reading. Students read the article aloud and again prepared a list of vocabulary words which were compiled on the board. These lists follow. The words on these lists were again used on the basis for charades.

This sheet of words was compiled by the students of one French I class:

l'atmosphère
l'eau
la pollution
les autos
les avions
des animaux
les installations chimiques
les parcs
le monde
les arbres
des oiseaux

l'atmosphère
l'eau
la pollution
les autos
les avions
des animaux
les installtions chimiques
les parcs
le monde
les arbres
des oiseaux
problème
les forêts
sauvage
taureaux
la terre
chevaux sauvages
nous - mîmes
I'homme
ll camping
des fleurs
des insectes
la nature
detruisons
le gaz carboniques
empoisonne
des parcs nationaux et régionaux
industrielles

This sheet of words was compiled by the students of the other French I class:

le monde
la nature
l'arbre
les autos
l'atmosphère
les oiseaux
la pollution
les grandes entreprises industrielles
les parcs nationaux et regionaux
les installation chimiques
protéger
des assassins
l'homme
victime

les ours
tuer
l'eau
la terre
empoisoner
le gaz carbonique
les parcs
pousser
les avions
du progrès
les flamants roses
aider

détruire
la forêt
l'écologie
des animaux
les terrains
vivre

Although the projects carried out in French were few, more material has since become available and could be used for further projects in French ecology. A list of these materials plus others actually used in the original project follow:

French Ecology: Bibliography

articles

"Nous, les assassins!", Chez Nous, 5, fevrier 1971, pp. 4-5. The article is very general and brief but it has lots of ecology terms and is simple enough so that First Year students can understand it.

movies

Small Wilderness, Time-Life Films, Department LS-1, 43 West 16th Street, New York, N. Y. 10011. "A study of the flora and fauna on the salty plain of Camargue, France. A plea for environmental sanity and the danger in wilderness destruction." Very good. In English.

book

Morton and Morton, La Presse, DC Heath and Company, c. 1972, This book, appropriate for advanced Second-Year students or third-year students, has a series of articles on pollution and ecology which were culled from French newspaper articles. Accompanying the articles are questions and suggested topics for discussion. Very good.

SPANISH

By

Joseph Martin

Editor's Note: The pamphlets used in this class dealt primarily with immediate and local effects of dangerous agricultural chemicals, rather than with wider and more long-range environmental effects such as: eutrophication of waterways through excessive use of chemical fertilizers; possible egg-shell-thinning by DDT; selection for genetic resistance to pesticide among target populations. (The sample pamphlet included here dealt exclusively with immediate and local effects.)

In order to achieve a balanced presentation, one class period was devoted to a discussion among Dr. Cardenas, the project director, the teacher and students. In this discussion, the pamphlets were set in the broader ecological context of possible long-range effects.

The project director was pleased with this discussion, and only regrets that he could not have devoted more time and energy to its further development, to follow-up readings by the students, and so forth. Such would be our recommendation for further implementation of what was done in this class.

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A summary of the involvement of the Spanish Four class at Crescent Valley High School, Corvallis, Oregon, with the Rachel Carson Program as directed by Dr. Tom Tanner:

Our class was visited by Dr. Juan Cárdenas, a native of Mexico, who for four years was director of a program sponsored by Oregon State University, with headquarters in Bogotá, Colombia. The purpose of the program was to increase the productivity of the agricultural areas in Colombia.

One of the tasks which fell to Dr. Cárdenas was to warn and protect the native rural population from the dangers of the dangerous chemicals which they were using to kill some of the undesirable plant life. Dr. Cárdenas prepared pamphlets, written in Spanish, and these were distributed among the people without charge.

Each Spanish student at the Fourth Year level who was participating in the Rachel Carson Program (there were eight of them) received a pamphlet which was different from that given to the other seven students. The job of each boy or girl was to translate all of the Spanish in the pamphlet into English. After this was done, Dr. Cárdenas read them over in order to make sure that the English sent the same message that he intended to convey to the natives of Colombia. He made a few changes on the margins and then the translations were typed up again, but this time by a different person; not a Spanish student but a girl taking typing who wanted to become a better typist - who aspired to not only type correctly and without errors, but to learn how to arrange papers properly; originating meaningful and accurate titles and proper arrangement of paragraphs.

When the girl who had translated the Spanish into English finally received the finished product of her efforts, it was a far different paper than she had turned over to the typist.

Consistent with the aims of the Rachel Carson Program, the girl who typed the finished paper (she was not a Spanish student) was also learning about some of the dangers of chemicals used in agriculture and also learning about some of the problems in the agricultural areas of Colombia; some detail of the struggle going on far away from Corvallis as the people of Colombia sought to reach a better balance, a better harmony between man and nature.

I found the program more than a pretense; I found it realistic, interesting and consistent with the goals of sound ecology.

For example, one girl also translated an article in a magazine published in South America - an article which detailed (in Spanish), the advantages of the Brahma blood in beef cattle now being kept in South America. Beef animals carrying all or part Brahma blood have a decided advantage in the hot, sticky jungles because of a vastly different cooling system built into their bodies by nature. This girl learned that different parts of the world require different approaches to nature if one is to achieve harmony with nature, rather than carry on a war with the forces of nature.

My observations carried me to the conclusion that the Rachel Carson Program offers something of value and I would like to explore its possibilities to a greater depth.

A sample translation, typed by a typing student at Crescent Valley High School, follows:

RACHEL CARSON PROGRAM
Crescent Valley High School
Corvallis, Oregon
Director: Dr. Tom Tanner
Submitted by Carol Campbell
March 2, 1972

Subject: A translation from Spanish to English (from a pamphlet actually distributed in Colombia)

Precautions for the use of herbicides

The increase in the use of herbicides in Colombia during the last years has consequently made it necessary to establish standards for their correct use, in order to avoid accidents by the misuse of the said agricultural products. The fact that the herbicides will be used for the control of weeds does not mean that they are not toxic to human beings or animals, although the majority of herbicides are not toxic to humans or animals, all should be treated with much care, since even those herbicides that generally are not toxic do become dangerous when you don't follow the recommendations given on the label.

ALL HERBICIDES SHOULD BE TREATED LIKE A TOXIC OR POISONOUS PRODUCT

Observe all the following rules when you have to work with herbicides:

1. Buy the quantity and the herbicide recommended. Do not buy what your neighbor or friend tells you to.

2. Read and UNDERSTAND in detail all the instructions on the label.

3. Whatever you doubt about using the product, consult with your Extension agent or with the Agronomist in charge of distribution of the product in your zone.

4. Upon buying several quantities of an herbicide, examine the labels of each container or bag to find out if all contain the same product.

5. Upon looking at the label, read carefully the section of precautions or danger; in case of highly and moderately toxic products, know the antidote necessary to counteract the effects of intoxication and where to obtain it quickly.

6. Have the telephone number and address of a competent doctor that can be reached quickly in case of intoxication.

7. Never store herbicides with other agricultural pesticides or with seeds, fertilizers, food, or drinks. Guard the herbicides under lock and key and beyond the reach of children or animals. If the product is flammable, store it in a safe and isolated place.

8. Never store herbicides in containers or bags such as pop bottles, milk bottles, sacks of flour, since those can be confused with drinks or food. During storage, always keep the herbicide in its original container or bag, in which you should always have the label intact and legible. The containers and bags should always be well closed or sealed.

9. Upon moving herbicides by land or air, write clearly and in a visible place on the package of the cargo the word POISON; notify the personnel in charge of transporting it and demand that he not place it together with animals or products consumed by humans or animals.

10. In case you spill a product, clean it with an absorbent material (cloth) and then burn the material used. If it is a powder avoid breathing when picking up.

11. Before using a product, clarify with the Agronomist all doubts you have in relation to the herbicide.

While handling the herbicide, the worker will be in direct contact with the product. Consequently, observe the following rules in order to avoid accidents:

1. Read and understand the instructions of the label before opening the container or bag. This should be done even though it was done upon buying the product. If other persons are going to be in contact with the herbicide during its use, explain to them the precautions they should take. Whatever doubt you may have to the matter consult your extension agent.

2. Never eat, drink, or smoke during the handling of herbicides. In general, the herbicides are most dangerous when they are ingested or breathed in, but they are also dangerous when they come in contact with skin. Avoid all contact of the body with the product, especially if it is in concentrated form. In case of contamination, wash thoroughly with enough soap and water. If the product causes irritation, go to a doctor immediately.

3. Always prepare the mixture for spraying in a well ventilated place and avoid breathing the vapors and dust. During the application AVOID the vapors and dust. Always make the application in the direction of the wind, never against it.

4. If the instructions indicate the use of masks, gloves, and other apparel of protection, comply with the instructions exactly. During the application it is convenient to use a long sleeved shirt.

5. When spraying, avoid contamination of water that is used by humans or animals. Fish, in general tolerate very low quantities of herbicides.

6. NEVER use the mouth to unplug a hose, spout, or nozzle. Don't use your fingers for cleaning or unplugging parts of the sprayer.

7. If during the use of the herbicide the worker gets a headache, nausea, or whatever discomfort, remove him immediately from the operation, let him rest, and call a doctor.

8. If the product is spilled on the clothes, remove the clothes immediately and bathe. The clothes should be washed carefully with plenty of water. After taking out the quantity needed from the container, seal it to avoid spilling. Remember that shoes can also be contaminated.

9. While washing the equipment avoid contamination yourself. Don't wash the equipment where the water from washing can contaminate water consumed by humans or animals.

10. Burn or bury all containers. If they are burned, avoid breathing the smoke. If they are buried, make it at a depth of a meter and a half in a safe place. NEVER REUSE OR SELL.

Reprinted by permission of Dr. Juan Cárdenas

Teacher Faye Bone was out of the country during Summer, 1972, and so the project director shall attempt to describe the participation of German classes as best he can. At least three types of activities occurred:

I. An appropriate German-language bulletin board was designed and put up by students.

II. Poems expressing appreciation of nature were translated and discussed, sometimes with appropriate discussion questions mimeographed and distributed by the teacher. These included "Erinnerung an Sonia" ("Remembering Sonia") by Vera Lachmann, "Herbstagg" ("Autumn Day") by Rainer Maria Rilke, and "Frühlingstrost" ("Heart's Ease") by Dietmar von Eist (12th Century), in addition to the two works attached.

III. In addition, two German-edition books by the conservationist Dr. Bernhard Grzimek were purchased for use in Mrs. Bones' classes. They did not arrive until late in Spring term, and so were not used in school year 1971-72. Mrs. Bone definitely plans to use them as collateral reading during 1972-73, however.

The two books, Wir lebten mit den Baule and Serengeti darf nicht sterbe, deal with African wildlife and its preservation, and are profusely illustrated. The latter book corresponds to Grzimek's documentary film Serengeti Shall Not Die, which won an Academy Award in 1959.

The books are available from the publisher, Franckh'sche Verlagshandlung, W. Keller & Company, Kosmos-Verlag, 7000 Stuttgart 1, Germany.

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Sample Poems Used in German Classes:

Der Weiher

En liegt so still im Morgenlicht,
So friedlich wie ein fromm Gewissen.
Wenn Weste seine Spiegel kussen,
Des Ufers Blume fühlt es nicht;
Libellen zittern über ihn,
Blaugoldne Stäbchen und Karmin,
Und auf des Sonnenbildes Glanz
Die Wasserspinne führt den Tanz.
Schwertlilienkranz am Ufer steht
Und horcht des Schilfes Schlummerliede,
Ein lindes Säuseln kommt und geht,
Als flüstr'es: Friede! Friede! Friede!

ANNETTE VON DROSTE-HÜLSHOFF
1797-1848

The Pond

It lies so still in morning's gleam,
As peaceful as a conscience shriven.
Wind-kisses, to its mirror given,
Don't stir the framing flowers' dream.
Above it dragon-flies are trembling,
Bluegold and carmine wands resembling;
A water-spider weaves its dance
On glittering sun-reflection's glance.
Ashore, a wreath of iris grows.
The rushes' lulling does not cease.
A gentle shiver comes and goes,
As if it whispered: Peace! Peace! Peace!

ANNETTE VON DROSTE- HÜLSHOFF

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Sah ein Knab' ein Röslein stehn,
Roslein auf der Heiden.
War so jung und morgenshön,
Lief er schnell, es nah' zu sehn,
Sah's mit vielen Freudan.
Röslein, Röslein, Röslein rot,
Röslein auf der Heiden.

Knabe sprach: "Ich breche dich,
Röslein auf der Heiden!"
Röslein sprach: "Ich steche dich,
Dass du ewig denkst an mich,
Und ich will's nicht leiden."
Röslein, Röslein, Röslein rot,
Röslein auf der Heiden.

Und der wilde Knabe brach
's Röslein auf der Heiden;
Röslein wehrte sich und stach,
Half ihm doch kein Weh und Ach,
Musst'es eben leiden.
Röslein, Röslein, Röslein rot,
Röslein auf der Heiden.

Goethe

Please answer the following questions:

1. Was sah der Knabe?
2. Wo stand dash Roslein?
3. Wie war das Roslein?
4. Warum lief der Knabe schnell?
5. Was sagte der Knabe?
6. Was sagte das Roslein?
7. An wen wird der Knabe denken?
8. Was will das Roslein nicht leiden?
9. Wer war wild?
10. Welches Roslein brach der Knabe?
11. Wie wehrte sich das Roslein?
12. Was half dem Roslein nicht?

67/68

A Unit in Algebra:

The Exponential Function of Population Growth

by

Paul Sanders

These are comments from a student teacher's attempt at trying to teach a secondary algebra course from a non-standard approach: an attempt to guide understanding of mathematics along with mathematical skills. This was done during spring quarter, 1972.

The students in my Algebra II class had previously learned the basic algebraic skills in working with and transforming exponential numbers. Traditionally, the exponential function in a secondary Algebra II class is treated only as a necessary step in introducing logarithms. Usually the basic properties are previewed and then expanded to include all rational and non-imaginary real numbers. Logarithms are then defined as exponents, and skills in producing them from mystical charts are taught. This traditional approach did not fit into my philosophy of teaching mathematics. How could I teach these concepts as a mathematical abstraction with some real world applications?

I decided to base my introduction of exponential function on a simplified population growth situation: A city doubling every "x years" using what I call the mathematicians first law, "you can create any thing you want as long as it works", I developed an exponential function dependent on time. Explanation of dynamic or continous population growth necessitates one defining this exponential function for all real numbers: how does one calculate the population at 4 3/4 years, or π years?

The next step in this unit was introducing the notion of the logarithmic function. As the inverse of our exponential function, applying it to our population growth model and realizing its consequences, we found that the usefulness of this mathematical abstraction was in finding the years in which our population reached certain magnitudes (the inverse of what we had done before). I found example problems in the Physics Teacher* to be quite helpful in student understanding of our mathematical abstraction and its application to the population model. Because of our

* M. Jeffries, "An Experiment on Population Growth and Pollution", The Physics Teacher, December 1971, pp. 536-537. Copyright 1970 by AAPT. Reprinted with permission.

results we discussed the problem of the population crisis and what kind of conclusion our mathematical abstractions and models were predicting. I was careful at this point to warn students not to put too great a weight on what we had created mathematically, for the natural world is very unpredictable and decisions made are very seldom totally correct. Questions were raised about how we could change our mathematical abstraction of our population model to include negative and positive outside influences on population growth. Although discussion was limited, interested students were referred to a pamphlet in the SMSG Supplement Series entitled "A Mathematical Model of the Struggle for Survival".

Student approach to the unit was positive. Their need for relevant education seemed to spur this interest. The learning of mathematical skills was still a problem for some students which it will always be. The thing most positive about the unit was its importance in reinforcing the purpose and importance of mathematics in today's world.

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The following problems are excerpted from the article, "An Experiment on Population Growth and Pollution", by M. Jeffries, by permission:

Real Life Problem No. 1

There are now three billion (3×10^9) people on the earth. Assuming that the world's population has been growing at its present rate (doubling every 30 years), calculate how many years ago Adam and Eve existed. If this growth continued, this many years in the future will see three billion human beings on earth for every couple today. Obviously some of our assumptions are going to have to change.

Real Life Problem No. 2

The cities of St. Paul and Minneapolis have a population of 1.2 million and an area of 120 square miles, giving a population density of about ten thousand people per square mile. The population of the United States is 200 million and its land area is three and one-half million square miles. With the U.S. population doubling every 40 years, how long will it be before the entire country has the same population density as the Minneapolis-St. Paul area and there are no longer any farms, forests, or wilderness?

Real Life Problem No. 3

Suppose a steel mill is pouring smoke and fumes into the air at a rate that the people in the neighborhood consider intolerable. They bring a suit through the State Pollution Control Board against the company. The home owners demand an end to the pollution. This would involve an initial expenditure of several million dollars by the company and one hundred thousand dollars per year maintenance. The company offers a compromise which would cut down pollution by 75% and cost the company only one-quarter million dollars initially and thirty thousand dollars a year for maintenance. If the home owners do not want to accept the company's proposal, the company threatens to tie the case up in court for up to five or six years, thereby saving themselves the maintenance

costs for that period. In addition, there is no guarantee that the State and home owners would win the suit.

In the meantime, this company is fairly successful and is increasing its sales and production by about 10% a year. Assuming the pollution increases with production, doubling every seven years, how much will the pollution increase in the five years of litigation with nothing being done?

If the home owners accept the proposal, how long will it be before the pollution returns to its original level?

Real Life Problem No. 4

Detroit auto manufacturers are working on a method to cut down automobile pollution by 90 percent. If the number of cars increases at the same rate as the economy, how long will it be before the pollution is just as bad as before?

Real Life Problem No. 5

If we assume that the population of Mexico is 40 million and doubling every 20 years, and that the population of China is 600 million and doubling every 50 years, how long will be be before there are as many Mexicans as Chinese? What will the population of either country be then? When will there be as many Mexicans as Americans?

Answers: (a) about 130 years, (b) 3.65 billion, (c) about 90 years.

Editor's Note: CVHS math teacher Dick Moon had earlier used these problems as the basis for an extra-curricular, voluntary activity. The problems were posted outside his classroom door with an invitation to solve them. Several students did so. During one "X-period", a number of students along with teachers Dick Moon, Fred Sutherland, and Jack Whitney convened to discuss the answers and their implications.

Another mathematics problem which can be used as a "Real Life Problem" is the following, written by the project director in 1965:

The Predicament of the Plant Myopia

T. Tanner, 1965

1. The large planet of Myopia can support, at the very most, a population of 100 billion, if the Myopians continue to use the same land for agriculture which they are now using. Of all land on Myopia, 80% can be used for farming, and 20% is unsuitable. Here is a breakdown of how the land of Myopia is now being used:

Suitable for farming:	
Being used for farming	60%
Covered with cities	15%
Preserved in national parks and wilderness areas	5%
Total	80%
Unsuitable for farming:	
Covered with cities	15%
In parks and wilderness areas	5%
Total	20%

The Myopian population is now very close to 100 billion, and they are extremely worried. They are considering what can be done, since their population is increasing at the rate of 3% per year. They now get half their food from the land and half from the sea, and both are producing at full capacity: Myopian scientists can find no way to obtain more food from the sea or from that land which is now being used.

In solving the following problems, keep them simple by assuming that all usable land is about equally productive. (a) How many people can be fed if the national parks and wilderness areas are abandoned and turned over to agriculture? The answer is 104,167 billion---your job is to show how the answer is computed. (b) This plan will allow some extra time before the day is reached when there are too many Myopians to be fed. How much extra time, approximately?

The Myopian leaders agree that this plan is not enough. They decide not only to abandon parks and wilderness to agriculture, but also to tear down the cities which are located on good potential farmland. The streets and buildings will be cleared away as their ancestors once cleared the forests, and the people living in those cities will move to new cities that will fill all the land unsuitable for agriculture. (c) Now how great a population can be supported? (d) How much extra time is gained by this new plan, approximately?

2. One area may have a greater population density than another. That is, it may have people more densely crowded together. What will happen to the population density of the Myopian cities as a result of the above plans? State in approximate figures, and explain.

3. Let's say the Myopians follow the above plans and eventually their population levels off at 115 billion for some reason. After that, their numbers neither increase nor decrease. As a result, they don't starve. What other problems will they face, however? Discuss them at some length.

4. Discuss your solution to the Myopians' problems. What are some different solutions they might have tried earlier? What other solutions are still open to them, if any? Which solutions do you favor, and which do you dislike? Why?

5. Make up a problem somewhat like that in question 10. Do more than plug in new figures into that problem: be as original as you can be. Also provide your answer to the problem.

Answers: Myopia

1. (a) The arable land in the national parks adds 1/12 to that now used for farming (5% plus 60%).

That which is now used supports 50 billion persons (the sea supports another 50 billion). So, using this plan, 1 1/12 x 50 billion (land), plus 50 billion (sea) can be fed, or 104.167 billion.

(b) The population is increasing at 3%/year. After one year of extra time, the population is 103 billion. After another one-half year, it will be more than 104.5 billion. So 104.167 billion will be reached in a little less than a year-and-a-half of extra time.

(c) Now a full 80% of the land will be available for agriculture, 1/3 more than the 60% which can support 50 billion. So 1 1/3 x 50 billion (land), plus 50 billion (sea), equals 116.67 billion.

(d) Instead of only 1 1/2 years, the period of grace is now extended to a little over five years:

Population (billions)	100	103	106.1	109.3	112.6	116	116.67
Years of grace	0	1	2	3	4	5	5+

Some students may interpret the 3% as an absolute figure of 3 billion. If so, there is a difference of only a few months:

Population (billions)	100	103	106	109	112	115	116.67
Years of grace	0	1	2	3	4	5	5½+

2. Myopian cities currently occupy 30% of the land. After relocation, they will occupy only the 20% unsuitable for agriculture. The density will thus be increased by half.

3. The social ills which plague crowded cities may result, and these might be discussed at length by some students. The elimination of wilderness and, consequently, the wildlife therein, would have profound economic, esthetic, and psychological effects. There is great room for discussion here.

5. Be warned that a good problem may take a full day or more. This should not be attempted unless students really have time to do a good job.

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ECOLOGICAL OPPORTUNITIES IN A WORLD AREA CLASS

by

Doug Bashor

Editor's Note: A part of the social sciences curriculum at CVHS is the world studies course, which includes units on selected nations, each nation handled by a teacher with special knowledge of that area. During the school's first year we were not able to take advantage of this course as we had hoped, for reasons described in the main body of our report. (These reasons included a level of confusion attendant upon the opening of the school, particularly in the social-sciences humanities area.) We were encouraged, however, that during the relative calm of summer Mr. Bashor was able to develop project-related plans for the following year, with our encouragement. This, we hope, will be a positive addition to the legacy left by the project to the school.

Ecological Opportunities in a World Area Class

(Case in Point: Russian Studies)

by

Doug Bashor

Basic Considerations:

1. Most 10th grade students are somewhat interested and somewhat informed about environmental problems and prospects.

2. Most 10th grade students focus on environmental problems from a standpoint of the "American experience".

3. Most 10th grade students have not yet come into contact with Ecology in its world context.

4. It is possible, desirable, and relatively simple to acquaint students with some of the ecological concerns of other countries.

5. If students are allowed to cross-reference a multiplicity of national experiences in environmental studies, their concepts of the problems may assume a world scene in a broad, expanding context.

Implementation of Environmental studies as a part of a unit of study on the U.S.S.R.:

1. In the final phases of a course on the U.S.S.R., a unit entitled "Problems and Prospects" can be set up.

2. Basic assumption of environmental concern can be drawn from previous knowledge of the production goals and stated objectives of the Policy makers in the Soviet Society.

3. Students who have become "Russian Watchers" will begin to produce a readily available volume of material which is being printed both in the Soviet Union and other presses concerning Soviet environmental quality.

4. Students should be able to easily assess and compare basic considerations of the U.S.A. and U.S.S.R. with regards to ecological balance.

Sources for Implementation:

Comment: Sources are available in rapidly increasing numbers as the world attempts to cope with the problem of environmental destruction via industrial exploitation. The Soviet Union usually is last to admit that problems exist. They are, though, now publishing material which reflects on the seriousness of these problems and the methods which they are using to combat pollution, environmental mis-use, etc.

The following is a sample list of specific articles which have been useful in assessing the Soviet environmental challenge. This list is by no means to be interpreted as conclusive and is far from complete.

Publication	Date	Title	Author
Environment	Nov., 1971	"Soviet Pesticides" p. 16	Philip Pryde
Soviet Life	May, 1972	"Antarctica: Model of Cooperation" p. 46	Igor Zotikov
Soviet Life	Apr., 1972	"Siberian Oil: Discovery of the Century" p. 56	Boris Shcherbina
Soviet Life	Feb., 1972	"Problems of the Dnieper" p. 21	Ostap Iuko
Soviet Life	Sept., 1972	"Corrosion" p. 12	Yakov Kolotykin
Soviet Life	Mar., 1972	"Forest Preserves near Moscow" p. 19	Sergei Oshanin
Soviet Life	Sept., 1971	"The Soviet Power Industry 1971-75" p. 5	Pyotr Neponozhny
Soviet Life	Jan., 1971	"Soviet Agriculture- a 5-year Perspective" p. 2.	Victor Pannikov
Soviet Life	Jan., 1971	"What will Happen to the Wolf?" p. 52	Sergei Oshanin
Soviet Life	Nov., 1970	"The Role of Siberia" p. 24	Arther Roe
Soviet Life	June, 1971	"Economic Forecasting and Planning" p. 44	Anatoli Yefiniov

Soviet Life	June, 1971	"Taming Subterranean Forces" p. 56	Valadimir Gubarev
Soviet Life	Aug., 1971	"Reclamation: Future of Soviet Farming" p. 4	Geogeri Alereywsky
Soviet Life	Oct., 1971	Several articles in the Economy and Service Section p. 2, 6, 16, 20	
Soviet Life	July, 1971	"Erosion and the Men Who Fight it" p. 47	Yuri Chererecheuha

Additional Note on Sources: Another source is the Christian Science Monitor, especially the columns of Paul Wohl and Charlotte Saikowski, who assess all aspects of Soviet life, including ecological considerations.

Home Economics

by

Jeanette Wagner and Polly Johnson

During the 1971-72 school year the Home Economics Department offered environmental ideas in several of the courses taught. In "Creative Clothing" the students used fabric from a discarded or out of style dress to make a wearable garment. These new garments included bathrobes, shorts, tank tops, vinyl skirts, and half slips.

The Interior Decorating students cleaned their dresser to collect "junk" items for collages. A cardboard sheet was used for backing. The collected items, including thread spools, hair clips, paper clips, jacks, chop sticks, M & M's, 9 chains, etc. were attached to the cardboard sheet. The final collection was sprayed one color to make a collage. These students also used tuna cans as candle holders in a centerpiece.

The Child Development Area, a nursery school which meets three days a week, has an enrollment of 20 pre-schoolers. In this class potted ewe Christmas trees were used which were planted outdoors after Christmas. The students grew pumpkin plants from seeds as well as marigolds and zinnias from seeds. Chickens were hatched in an incubator. The play dough used in the nursery school is made by the high school students as was much of the equipment including bean bags, masks, bean bag throw, pillows, blocks, flannel boards, and flannel board stories.

Editor's Note: As can be inferred from the above, our home economics teachers placed a certain emphasis upon non-wasteful homemaking techniques, or "home re-cycling." Also, at Miss Wagner's invitation, a home team of public health nurses visited her child development classes to show various kinds of contraceptive devices and to discuss the use and comparative effectiveness of each.

Miss Wagner and Mrs. Johnson also planned a special course for second semester, but did not obtain sufficient enrollment. Its description in the school's semester catalog is as follows:

THE ECO-PROBLEM IN HOME ECO-NOMICS - One Semester - Girls and Boys

A variety of selected topics in ecology and environment including family planning, pollution, organic gardening and composing, recycling centers and use of leisure time. Home ecology may include food, laundry, equipment, waste products, and noise, - plus many more. Possible projects include home made soap, sour dough breads and cakes, work in recycling centers, checking grocery stores, slaughter houses, designing space-saving homes,

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landscaping and the study of personal space. If you are interested in your environment, bring your ideas and experience and help with the Eco-problem!

The project purchased several books dealing with ecologically-sound homemaking techniques, including chemical ratings of various named washday products, pesticides, and other household products. We cannot personally verify the accuracy of these; we cite them here without further comment, as possible references for homemaking courses:

Ottinger, Betty Ann, What Every Woman Should Know - And Do - About Pollution: A Guide To Good Global Housekeeping, ep press, city and date not given. Obtained from Friends of the Earth, Western Book Service Co., 1382 Natoma St., San Francisco 94103, $1.95.

Swatek, Paul, The User's Guide to the Protection of the Environment, Friends of the Earth, New York, 10017, June, 1971, $1.25

Caillet, Greg, Paulette Setzer & Milton Love, Everyman's Guide to Ecological Living, The MacMillan Co., New York 10022, 1971, $.95.

"Pesticides and Your Environment," 20-page booklet available free from The National Wildlife Federation, 1412 16th St., N.W., Washington D.C., 20036.
Contains suggestions for non-pesticidal control of insects in the home garden. Also recommends those pesticides which seem most acceptable, where other controls impossible.

Gassaway, Carolyn, and Donna Hachmuth, To Live With the Earth: The Portland Environmental Handbook, 2nd edition, 1971, Portland, Oregon. Available from The Oregon Environmental Council, 1238 N.W. Glisan, Portland, from the bookstores of Portland-area colleges, or from the authors at (503) 643-1829 (C.G.) or (503) 646-6246 (D.H.). 40 pp., $.25